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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/526,669

10/26/2005

Itaru Homma

040894-7191

3155

9629 7590 02/23/2009  
MORGAN LEWIS & BOCKIUS LLP  
1111 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 20004

EXAMINER

ETHERIDGE, EMPRESS A

ART UNIT

PAPER NUMBER

4111

MAIL DATE

DELIVERY MODE

02/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/526,669	<b>Applicant(s)</b> HOMMA ET AL.	
	<b>Examiner</b> EMPRESS ETHERIDGE	<b>Art Unit</b> 4111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 6-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> .                                  | 6) <input type="checkbox"/> Other: ____.                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :03/04/2005, 01/12/2007, 11/20/2007, and 09/04/2008.

## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election of group I, comprising claims 1-5, in the reply filed on February 3, 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 6-26 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kudo et al. (Amorphous  $V_2O_5$ /carbon composites as electrochemical supercapacitor electrodes, 2002, Solid State Ionics, 152-153, 833-841, available online on 6/9/2002) ("Kudo").

Regarding claim 1, Kudo teaches a carbon fine powder (carbon particles) coated with a metal oxide ( $V_2O_5$ ) and a thin film layer of the metal oxide ( $V_2O_5$ ) is coated on the surface of the carbon fine powder having a large specific area (see page 835, paragraph 1 and page 839, Discussion paragraph 1).

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Kudo fails to specifically teach that the metal oxide ( $V_2O_5$ ) is uniformly coated on the surface of the carbon fine powder.

However, Kudo teaches that optimizing the thickness of the metal oxide ( $V_2O_5$  gel) to about 5 nm would lead to an homogenous coating. Kudo also teaches that homogeneously covering the carbon surface with the  $V_2O_5$  gel would improve the performance of the composite electrode (see page 841, paragraph 1).

Therefore, as indicated by Kudo, the metal oxide thickness can be considered a known result effective variable whose determination would have been within the ambit of a person of ordinary skill in the art without undue experimentation. The discovery of an optimum value of a known result effective variable, without producing any new or unexpected results, is within the ambit of a person of ordinary skill in the art. See *In re Boesch*, 205 USPQ 215 (CCPA 1980) (see MPEP § 2144.05).

Consequently, as evidenced by Kudo, a person of ordinary skill in the art would accordingly have recognized the suitability of applying a uniform coating of the metal oxide ( $V_2O_5$ ) onto the carbon fine powder. The vanadium oxide can intercalate and de-intercalate lithium at a very high rate. Therefore, it would have been obvious to increase the layer thickness of the  $V_2O_5$  gel to improve discharge/charge cycle performance and improve the performance of the composite electrode (see page 841, discussion and conclusion).

Regarding claim 2, Kudo teaches a carbon fine powder (acetylene black powder) coated with a metal oxide ( $V_2O_5$ ) and a thin film layer of the metal oxide ( $V_2O_5$ ) to be coated has a thickness of 50nm (see page 840, left side, figure 11).

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Regarding claim 3, Kudo teaches a carbon fine powder (carbon particles) coated with a metal oxide ( $V_2O_5$ ) and the metal oxide is vanadium oxide (see abstract).

Regarding claim 4, Kudo teaches the specific surface area of the carbon fine powder is  $61\text{m}^2/\text{g}$  (see page 834, section 2.2, paragraph 1).

Regarding claim 5, Kudo teaches a carbon fine powder (carbon particles) coated with a metal oxide ( $V_2O_5$ ) and the metal oxide ( $V_2O_5$ ) in the thin film layer has a crystal structure of an amorphous phase (see abstract).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Empress Etheridge whose telephone number is (571)270-7892. The examiner can normally be reached on Monday- Friday 8:30-5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sines can be reached on (571)272-1263. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. E./  
Examiner, Art Unit 4111

/Brian J. Sines/  
Supervisory Patent Examiner, Art Unit 4111